Johanning E, Biagini R, Hull D, Jarvis, B. & Landsbergis, P. (1996). Health and immunology study following exposure to toxigenic fungi (Stachybotrys chartarum) in a water-damaged office environment. International archives of occupational and environmental health, 68, 207-218.

Int Arch Occup Environ Health 1996;68(4):207-18

Health and immunology study following exposure to toxigenic fungi (Stachybotrys chartarum) in a water-damaged office environment.

Johanning E, Biagini R, Hull D, Morey P, Jarvis B, Landsbergis P.

Mount Sinai School of Medicine, New York, NY, USA.

There is growing concern about adverse health effects of fungal bio-aerosols on occupants of water-damaged buildings. Accidental, occupational exposure in a nonagricultural setting has not been investigated using modern immunological laboratory tests. **The objective of this study was to evaluate the health status of office workers after exposure to fungal bio-aerosols, especially Stachybotrys chartarum (atra) (S. chartarum) and its toxigenic metabolites (satratoxins), and to study laboratory parameters or biomarkers related to allergic or toxic human health effects**. Exposure characterization and quantification were performed using microscopic, culture, and chemical techniques. The study population (n = 53) consisted of 39 female and 14 male employees (mean age 34.8 years) who had worked for a mean of 3.1 years at a problem office site; a control group comprised 21 persons (mean age 37.5 years) without contact with the problem office site. **Health complaints were surveyed with a 187-item standardized questionnaire**. A comprehensive test battery was used to study the red and white blood cell system, serum chemistry, immunology/antibodies, lymphocyte enumeration and function. Widespread fungal contamination of water-damaged, primarily cellulose material with S. chartarum was found. S. chartarum produced a macrocyclic trichothecene, satratoxin H, and spirocyclic lactones. Strong associations with exposure indicators and significant differences between employees (n = 53) and controls (n = 21) were found for lower respiratory system symptoms, dermatological symptoms, eye symptoms, constitutional symptoms, **chronic fatigue symptoms** and several enumeration and function laboratory tests, mainly of the white blood cell system. The proportion of mature T-lymphocyte cells (CD3%) was lower in employees than in controls, and regression analyses showed significantly lower CD3% among those reporting a history of upper respiratory infections. Specific S. chartarum antibody tests (IgE and IgG) showed small differences (NS). It is concluded that prolonged and intense exposure to toxigenic S. chartarum and other atypical fungi was associated with reported disorders of the respiratory and central nervous systems, reported disorders of the mucous membranes and a few parameters pertaining to the cellular and humoral immune system, suggesting a possible immune competency dysfunction.